IN THE CLAIMS:

1. (Amended) A method of optimizing the topology of [the IEEE 1394] a serial bus having a plurality of nodes each with communication ports, comprising the steps of:

prioritizing said nodes according to the number of said ports and the transmission speed of said nodes;

connecting a non-used port of the node of the [first] lowest priority with a port of the node of the [second] next priority; and

repeating the [previous] connecting step until all of said nodes are connected together, whereby said nodes are connected through said ports according to priority order.

3. (Amended) A method of optimizing the topology of [the IEEE 1394] a serial bus having a plurality of nodes each with communication ports, comprising the steps of:

comparing the total port number of all of said nodes with a reference value varying with the number (N) of said nodes to determine whether the prerequisite for constructing said topology is satisfied;

prioritizing said nodes according to the number of said ports and the transmission speed of said nodes when said prerequisite is satisfied;

connecting a non-used port of the node of the [first] lowest priority with a port of the node of the [second] next priority;

repeating the [previous] connecting step until all of said nodes are connected together; and

separating the last connected node to assign to the node of the foremost priority among the next speed group higher priority than the separated node when no port remains

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